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REMARKS/ARGUMENTS

Reexamination and reconsideration of this Application, withdrawal of the rejections, and formal notification of the allowability of all claims as now presented are earnestly solicited in light of the remarks that follow. Claims 1-14 are pending in the application. Claims 12-14 stand rejected. New claims 15-17 have been added, support for said new claims being found throughout the claims and specification as filed, and particularly at page 3 of the specification.

Applicant appreciates the Examiner's indication that claims 1-11 are allowable over the prior art of record. Claims 13 and 14 stand rejected under 35 U.S.C. §112 and 35 U.S.C. §101 as being indefinite and as being an improper process claim. In particular, the Office Action alleges the claims provide for the use of a method but fail to set forth any steps involved in the method, resulting in an improper definition of a process. Applicant has amended claims 13 and 14 to be independent claims expressly reciting a method and including the method steps of claim 1. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 112 and 101.

Claim 12 stands rejected under 35 U.S.C. §102(b) as being anticipated by Luk *et al.*, U.S. Patent No. 6,022,468. The Office Action alleges the '468 patent, like the present application, discloses a metal treated by a pulsed current, and that the product formed in the present application would be the same as the product formed according to the '468 patent. Applicant respectfully traverses the above rejection. Further, Applicant respectfully submits that the product of the present invention is in fact distinguishable from the product of the '468 patent.

The '468 patent discloses a method for hardening steel (except low carbon steel) comprising application of a pulsed direct current (col. 1, line 41). Further, as disclosed at col. 2, lines 49-51 and col. 3, lines 53-55, the current is cathodic. As shown at page 6, lines 15-21 of the present application, it is known that cathodic charging of steel results in hydrogen evolution, the hydrogen permeating the metal and causing the generation of martensite and causing embrittlement.

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The method of the present invention uses the application of pulses of opposite polarity, *i.e.*, alternating cathodic and anodic pulses. Consequently, hydrogen produced during the cathodic pulse is re-oxidized back into the electrolyte during the anodic pulse. Therefore, analysis of the resulting product would indicate no significant amount of hydrogen in the metal. This analysis is supported by the characteristic of the present invention of not generating martensite in the metal. Further, the method of the present invention has been shown to destroy or transform martensite originally present in the metal surface (see page 2, lines 32-36 and page 5, line 35 to page 6, line 14 of the present specification).

Additionally, Applicant directs the attention of the Office to Figure 1(a) of the present application, which is an X-ray diffraction pattern of an austenitic steel prior to treatment by the method of the present invention, and which includes some martensite (evident from the α' 110 reflection). Figure 1(b) provides an X-ray diffraction pattern of the same steel sample after treatment by the method of the present invention. Said figure does not include a α' 110 reflection indicating the martensite has been removed.

In light of the foregoing statements, Applicant respectfully submits the product of claim 12 of the present application is distinguishably different from the product of the '468 patent. This is evident in that the product of the '468 patent would be expected to have martensite in the metal and be brittle. In the product of the present invention, however, martensite is destroyed or transformed into austenite and thus the product of the present invention exhibits less brittleness. Therefore, Applicant respectfully requests reconsideration and withdrawal of the above-described rejection.

Applicant respectfully submits that all claims as now submitted are in condition for immediate allowance. Accordingly, a Notice of Allowance is respectfully requested in due course. If any minor informalities need to be addressed, the Examiner is directed to contact the undersigned attorney by telephone to facilitate prosecution of this case.

It is noted that an initialed copy of the PTO Form 1449 that was submitted with Applicant's Information Disclosure Statement filed July 17, 2002 has not been returned to Applicant's representative with the Office Action. Accordingly, it is requested that an initialed copy of the Form 1449 be forwarded to the undersigned with the next communication from the

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PTO. In order to facilitate review of the references by the Examiner, a copy of the Information Disclosure Statement and the Form 1449 are attached hereto. Copies of the cited references were provided at the time of the filing of the original Information Disclosure Statement, and, therefore, no additional copies of the references are submitted herewith. Applicant will be pleased to provide additional copies of the references upon the Examiner's request if it proves difficult to locate the original references.

It is not believed that extensions of time or fees for new addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for new addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



Ryan W. Cagle
Registration No. 47,468

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Raleigh Office (919) 862-2200
Fax Raleigh Office (919) 862-2260

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the US Patent and Trademark Office at Fax No. (703) 872-9306 on the date shown below.

Rebecca Kerney
Rebecca Kerney

2/9/04

Date